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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

Applicant : Edouard Francois
Serial No. : 09/924,322
Filed : August 8, 2001
For : PROCESS FOR THE FORMAT CONVERSION OF AN IMAGE
SEQUENCE
Examiner : Allen Wong
Art Unit : 2613
Customer No. : 24498

REPLY BRIEF

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May It Please The Honorable Board:

This is Appellant's Reply Brief in response to the Examiner's answer dated October 13, 2006. No fee for filing this Reply Brief is believed due. Should a fee be due please charge this fee to Deposit Account No. 07-0832. Appellants waive an Oral Hearing for this appeal.

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Date:

11/6/06

I. STATUS OF THE CLAIMS

Claims 1-8 are rejected and the rejection of claims 1-8 are appealed.

II. STATUS OF AMENDMENTS

All amendments were entered and are reflected in the claims included in Appendix I.

III. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 6,259,741) in view of Lim (U.S. Patent No. 6,333,952).

Claim 4 is rejected under rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent No. 6,259,741) in view of Lim (U.S. Patent No. 6,333,952) and further in view of Kato (U.S. Patent No. 5,701,164).

IV. ARGUMENT

Chen, when taken alone or in any combination with Lim, does not make the present claimed invention unpatentable. Thus, reversal of the Final Rejection (hereinafter termed "rejection") of claims 1-3 and 5-8 under section 35 U.S.C. § 103(a) is respectfully requested.

Chen, when taken alone or in any combination with Lim and Kato, does not make the present claimed invention unpatentable. Thus, reversal of the Final Rejection

(hereinafter termed “rejection”) of claim 4 under section 35 U.S.C. § 103(a) is respectfully requested.

Overview of the Cited References

Chen describes a system for converting the color format of a digital video bitstream. The system accounts for the allowable formats of the pre- and post-conversion bitstreams, including quantizer precision level, and whether luma and chroma data have separate quantization matrices, or share a common quantization matrix. In a particular implementation, an MPEG-2 4:2:2 P bitstream having a color format of 4:2:2 or 4:2:0 is converted to a MP bitstream having a color format of 4:2:0. Coding efficiencies are achieved by using the luma quantization matrix to re-quantize the chroma data, and re-using luma motion vectors for performing motion compensation of the chroma data. Further efficiencies can be achieved by representing a 4:2:2 reference picture in a 4:2:0 format for converting inter coded frames, and changing the position of a pixel downsizing filter and clip function. Adjustment of the quantization precision is provided as required. A transcoding function can also be achieved (see Abstract).

Lim describes a decoder for a digital TV receiver. The decoder of Lim improves the picture quality of a video signal down converted when an SD class TV receiver receives an HD class video signal. Generally, the decoder receives data in block units, converts a format of the data into a format for display, memorizes the data, processes the memorized data, and displays the processed data by converting the format to include more horizontal color signals than vertical color signals, memorizing and reproducing the data in downsampling the data in block units in a given ratio, and storing the data (see Abstract).

Kato describes a difference vector determination element used in an apparatus for coding motion vectors including register memories of which number is equal to a sum of maximum transmission numbers N and M of forward predictive and backward predictive motion vectors. A motion vector counter counts the number of transmissions of motion vectors to output a motion vector count signal. Register index designation signal generator designates indices of (1-N (N+1)~(N+M)) in order of transmission of forward predictive or backward predictive motion vectors on the basis of attached information such as motion compensation mode, prediction type, and picture structure, of motion vector, and the motion vector count signal from the motion vector counter to allow a switch to perform a switching operation, thus allowing register memories and motion vectors to have a one-to-one correspondence relationship. A difference circuit determines a difference between a motion vector inputted thereto and a value taken out from the register memory caused to correspond to the motion vector on the basis of motion compensation mode, etc (see Abstract).

Rejection of Claims 1-3 and 5-8 under 35 USC 103(a)

over Chen (U.S. Patent No. 6,259,741) in view of Lim

(U.S. Patent No. 6,333,952)

Reversal of the rejection of claims 1-3 and 5-8 under 35 U.S.C. 103(a) as being unpatentable over of U.S. Patent 6,259,741 issued to Chen in view of U.S. Patent 6,333,952 issued to Lim is respectfully requested because the rejection makes crucial errors in interpreting the cited reference. The rejection erroneously states that claims 1-3 and 5-8 are made unpatentable by Chen in view of Lim.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. *In re Fine*, 837 F.2d

1071, 5 USPQ2d 1596, 1598 (Fed.Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion, or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed.Cir. 1988), *cert. denied*, 488 U.S. 825 (1988); *Ashland Oil Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 28, 293, 227 USPQ 657, 664 (Fed.Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986); *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed.Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed.Cir. 1992).

Claims 1-3 and 5-8 are rejected under 35 USC 103(a) as being unpatentable over Chen et al. (U.S. Patent No. 6,259,741) in view of Lim et al. (U.S. Patent No. 6,333,952).

CLAIMS 1-3 and 5-6

A fundamental feature of the present claimed invention is **a copy of a converted pixel group** of a preceding image when the decoding mode is of the "inter" type with no residue. The Applicant respectfully submits that Chen and Lim et al., when taken alone or in combination, neither disclose nor suggest the copy of a converted pixel group when the decoding mode is of "inter" type with no residue.

As described in the Appeal Brief and responses to previous rejections, the Examiner's Answer (page 7, lines 3-4) **fundamentally misunderstands** and misinterprets Chen and the function of the adder 345 to copy the converted pixel group of a preceding

image. Specifically, the Examiner's answer asserts that the switch 327 passes reference data to the adder 345 to be used in place of current data. However, contrary to the assertion in the Examiner's Answer, **adder 345 is actually a subtractor**, such that "reference image data from the chroma MC(2) function is subtracted" from the current image data (Col. 11, line 65 – Col. 12 line 7). The output of the adder is "the difference between the current image and the reference image for an inter coded image" (Col. 12, lines 4-6). Thus, the function of the adder 345 is actually to **produce the residue (difference)** between the current image and the previous image and **not to copy a pixel group of the previous image** as in the present claimed invention. Thus, it is respectfully submitted that Chen neither discloses nor suggests "if the decoding mode is of the "inter" type with no residue, the conversion is performed by a **copy of a converted pixel group of the preceding image**" as recited in claim 1 of the present claimed invention.

Additionally, as described in the Appeal Brief and previous responses, Lim et al. disclose a first and second process for the conversion of B-type frames and I and P type frames, respectively. Lim et al. are not at all concerned with a conversion by a copy of a converted pixel group of a preceding image when the decoding mode is of inter type as in the present claimed invention. Thus, Lim et al., similarly to Chen, neither discloses nor suggests "if the decoding mode is of the "inter" type with no residue, the conversion is performed by a **copy of a converted pixel group of the preceding image**" as recited in claim 1 of the present claimed invention.

Furthermore, as both the individual systems of Chen and Lim et al. neither disclose nor suggest the conversion feature of the present claimed invention, it is respectfully submitted that the combination of the systems of Chen and Lim et al. neither discloses nor suggests "if the decoding mode is of the "inter" type with no residue, the conversion is

performed by a **copy of a converted pixel group of the preceding image**” as recited in claim 1 of the present claimed invention. Consequently, it is respectfully requested that the rejection of claim 1 under 35 USC 103(a) be withdrawn.

Dependant claims 2, 3, 5 and 6 are considered to be patentable based on their dependence on independent claim 1. Therefore, the arguments presented above with respect to claim 1 also applies to claims 2, 3, 5 and 6. Consequently, it is respectfully requested that the rejection of claims 1, 2, 3, 5 and 6 under 35 USC 103(a) be withdrawn.

CLAIM 7

Independent claim 7 provides a process for the format conversion of an image sequence employing video data coded on the basis of a structure of pixel groups. The process includes a first step for decoding the coded data and a second step of converting of the decoded data. If, for the decoding of a pixel group to be converted, an error of transmission of the coded data brings about an error masking mode equivalent to a decoding of the inter type with no residue, the conversion is performed by a copy of a converted pixel group of a preceding image linked by the motion vector associated with the coded pixel group.

A fundamental feature of the present claimed invention is a **copy of a converted pixel group** of a preceding image when an error of transmission of the coded data brings about an error masking mode equivalent to a decoding of the inter type with no residue. The Applicant respectfully submits that Chen and Lim et al., when taken alone or in combination, neither disclose nor suggest the copy of a converted pixel group when an error of transmission of the coded data brings about an error masking mode equivalent to a decoding of the inter type with no residue.

As described in the Appeal Brief and responses to previous rejections, the Examiner's Answer (page 7, lines 3-4) **fundamentally misunderstands** and misinterprets Chen and the function of the adder 345 to copy the converted pixel group of a preceding image. Specifically, the Examiner's answer asserts that the switch 327 passes reference data to the adder 345 to be used in place of current data. However, contrary to the assertion in the Examiner's Answer, **adder 345 is actually a subtractor**, such that "reference image data from the chroma MC(2) function is subtracted" from the current image data (Col. 11, line 65 – Col. 12 line 7). The output of the adder is "the difference between the current image and the reference image for an inter coded image" (Col. 12, lines 4-6). Thus, the function of the adder 345 is actually **to produce the residue (difference)** between the current image and the previous image and **not to copy a pixel group of the previous image** as in the present claimed invention. Thus, it is respectfully submitted that Chen neither discloses nor suggests "if for the decoding of a pixel group to be converted an error of transmission of the coded data brings about an error masking mode equivalent to a decoding of the inter type with no residue, the conversion is performed by a **copy of a converted pixel group** of a preceding image linked by the motion vector associated with said coded pixel group" as recited in claim 7 of the present claimed invention.

Additionally, as described in the Appeal Brief and previous responses, Lim et al. disclose a first and second process for the conversion of B-type frames and I and P type frames, respectively. Lim et al. are not at all concerned with a conversion by a copy of a converted pixel group of a preceding image when the decoding mode is of inter type as in the present claimed invention. Thus, Lim et al., similarly to Chen, neither discloses nor suggests "if for the decoding of a pixel group to be converted an error of transmission of the coded data brings about an error masking mode equivalent to a decoding of the inter

type with no residue, the conversion is performed by a **copy of a converted pixel group** of a preceding image linked by the motion vector associated with said coded pixel group” as recited in claim 7 of the present claimed invention.

Furthermore, as both the individual systems of Chen and Lim et al. neither disclose nor suggest the conversion feature of the present claimed invention, it is respectfully submitted that the combination of the systems of Chen and Lim et al. neither discloses nor suggests “if for the decoding of a pixel group to be converted an error of transmission of the coded data brings about an error masking mode equivalent to a decoding of the inter type with no residue, the conversion is performed by a **copy of a converted pixel group** of a preceding image linked by the motion vector associated with said coded pixel group” as recited in claim 7 of the present claimed invention. Consequently, it is respectfully requested that the rejection of claim 7 under 35 USC 103(a) be withdrawn.

CLAIM 8

Independent claim 8 provides a process for the format conversion of an image sequence employing video data coded on the basis of a structure of pixel groups. The process includes a first step for decoding the coded data (Figure 2, step 5; Page 6, lines 21-28) and a second step for converting the decoded data (Page 6, line 30 – Page 7, line 29). The coded data comprising complementary data allowing scalability, that is to say the obtaining of images of different resolutions, wherein, in the case where the complementary data pertaining to a pixel group and to a given resolution have zero value, this pixel group for the converted image of given resolution is obtained from a group of converted pixels of the image of lower resolution (Page 12, lines 7- 22).

A fundamental feature of the present claimed invention is **obtaining a pixel group** for the converted image of given resolution **from a group of converted pixels** of the image of lower resolution when complementary data pertaining to a pixel group and a given resolution have zero value. The Applicant respectfully submits that Chen and Lim et al., when taken alone or in combination, neither discloses nor suggests the obtaining a pixel group from a group of converted pixels of the image of lower resolution.

As described in the Appeal Brief and responses to previous rejections, the Examiner's Answer (page 7, lines 3-4) **fundamentally misunderstands** and misinterprets Chen and the function of the adder 345 to copy the converted pixel group of a preceding image. Specifically, the Examiner's answer asserts that the switch 327 passes reference data to the adder 345 to be used in place of current data. However, contrary to the assertion in the Examiner's Answer, **adder 345 is actually a subtractor**, such that "reference image data from the chroma MC(2) function is subtracted" from the current image data (Col. 11, line 65 – Col. 12 line 7). The output of the adder is "the difference between the current image and the reference image for an inter coded image" (Col. 12, lines 4-6). Thus, the function of the adder 345 is actually **to produce the residue (difference)** between the current image and the previous image and **not obtain a pixel group from a group of converted pixels** as in the present claimed invention. Thus, it is respectfully submitted that Chen neither discloses nor suggests "in the case where the complementary data pertaining to a pixel group and to a given resolution have zero value, this pixel group for the converted image of given resolution is obtained from a group of converted pixels of the image of lower resolution" as recited in claim 8 of the present claimed invention.

Additionally, as described in the Appeal Brief and previous responses, Lim et al. disclose a first and second process for the conversion of B-type frames and I and P type

frames, respectively. Lim et al. are not at all concerned with obtaining a group of converted pixels as in the present claimed invention. Thus, Lim et al., similarly to Chen, neither discloses nor suggests “in the case where the complementary data pertaining to a pixel group and to a given resolution have zero value, this pixel group for the converted image of given resolution is obtained from a group of converted pixels of the image of lower resolution” as recited in claim 8 of the present claimed invention.

Furthermore, as both the individual systems of Chen and Lim et al. neither disclose nor suggest the conversion feature of the present claimed invention, it is respectfully submitted that the combination of the systems of Chen and Lim et al. neither discloses nor suggests “in the case where the complementary data pertaining to a pixel group and to a given resolution have zero value, this pixel group for the converted image of given resolution is obtained from a group of converted pixels of the image of lower resolution” as recited in claim 8 of the present claimed invention. Consequently, it is respectfully requested that the rejection of claim 8 under 35 USC 103(a) be withdrawn.

Rejection of Claim 4 under 35 USC 103(a)
over Chen (U.S. Patent No. 6,259,741) in view of Lim
(U.S. Patent No. 6,333,952) and further in view of
Kato (U.S. Patent No. 5,701,164)

Reversal of the rejection of claim 4 under 35 U.S.C. 103(a) as being unpatentable over of U.S. Patent 6,259,741 issued to Chen in view of U.S. Patent 6,333,952 issued to Lim and U.S. Patent 5,701,164 issued to Kato is respectfully requested because the rejection makes crucial errors in interpreting the cited reference. The rejection erroneously

states that claim 4 is made unpatentable by Chen in view of Lim and further in view of Kato.

CLAIM 4

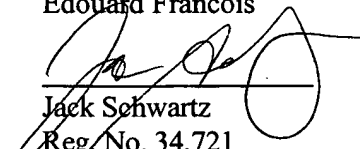
Dependant claim 4 includes the features of independent claim 1. Therefore, the arguments presented above with respect to claim 1 also apply to claim 4. Thus, dependant claim 4 is considered to be patentable based on its dependence on independent claim 1. Therefore, Consequently, it is respectfully requested that the rejection of claim 4 under 35 USC 103(a) be withdrawn.

V CONCLUSION

Chen, when taken alone or in combination with Lim et al., neither discloses nor suggests that "if the decoding mode is of the "inter" type with no residue, the conversion is performed by a copy of a converted pixel group of a preceding image linked by the motion vector associated with said coded pixel group" as recited in claims 1 and 7 of the present claimed invention. Additionally, Chen, when taken alone or in combination with Lim et al., neither disclose nor suggest that "in the case where the complementary data pertaining to a pixel group and to a given resolution have zero value, this pixel group for the converted image of given resolution is obtained from a group of converted pixels of the image of lower resolution" as recited in claim 8 of the present claimed invention.

Accordingly it is respectfully submitted that the rejection of Claims 1-8 should be reversed.

Respectfully submitted,
Edouard Francois



Jack Schwartz
Reg. No. 34,721
Tel. No. (609) 734-6866

Thomson Licensing Inc.
Patent Operations
PO Box 5312
Princeton, NJ 08543-5312
November 6, 2006

APPENDIX I - APPEALED CLAIMS

1. Process for the format conversion of an image sequence employing video data coded on the basis of a structure of pixel groups comprising a first step for decoding the coded data and a second step of converting of the decoded data, wherein, for a coded pixel group to be converted, if the decoding mode is of the "inter" type with no residue, the conversion is performed by a copy of a converted pixel group of a preceding image linked by the motion vector associated with said coded pixel group.

2. Process according to Claim 1, wherein, if the motion vector associated with the pixel group is null, the conversion is performed by recopy of the co-located pixel group and, if the motion vector is different from zero, the conversion is performed by motion compensation in a preceding converted image.

3. Process according to Claim 1, wherein the data are coded according to the MPEG standard, the pixel group is an image block and the coding mode is determined from the cbp (coded block pattern) code defining the apportionment of the coded blocks in a macroblock.

4. Process according to Claim 1, wherein the data are coded according to the MPEG standard, the pixel group is a macroblock and said coding mode is determined from the "skipped macroblock" or "uncoded" mode.

5. Process according to Claim 1, the format conversion being supplemented with a modification of the display employing a simple mathematical operation applicable at the decoded pixel group level, wherein the operation, adapted to the display domain, is applied to the copied converted pixel group.

6. Process according to Claim 5, wherein the simple operation is the addition of an offset.

7. Process for the format conversion of an image sequence employing video data coded on the basis of a structure of pixel groups comprising a first step for decoding

the coded data and a second step of converting of the decoded data, wherein, if for the decoding of a pixel group to be converted an error of transmission of the coded data brings about an error masking mode equivalent to a decoding of the inter type with no residue, the conversion is performed by a copy of a converted pixel group of a preceding image linked by the motion vector associated with said coded pixel group.

8. Process for the format conversion of an image sequence employing video data coded on the basis of a structure of pixel groups comprising a first step for decoding the coded data and a second step of converting of the decoded data, the coded data comprising complementary data allowing scalability, that is to say the obtaining of images of different resolutions, wherein, in the case where the complementary data pertaining to a pixel group and to a given resolution have zero value, this pixel group for the converted image of given resolution is obtained from a group of converted pixels of the image of lower resolution.

APPENDIX II - EVIDENCE

Applicant does not rely on any additional evidence other than the arguments submitted hereinabove.

APPENDIX III - RELATED PROCEEDINGS

Applicant respectfully submits that there are no proceedings related to this appeal in which any decisions were rendered.

APPENDIX IV - TABLE OF CASES

1. *In re Fine*, 5 USPQ 2d 1600, (Fed Cir. 1988)
2. *ACS Hospital Systems Inc v. Montefiore Hospital*, 221 USPQ 929,933
(Fed. Cir. 1984)
3. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966)
4. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438
(Fed.Cir. 1988), *cert. denied*, 488 U.S. 825 (1988)
5. *Ashland Oil Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 28, 293, 227 USPQ
657, 664 (Fed.Cir. 1985), *cert. denied*, 475 U.S. 1017 (1986)
6. *In re Oetiker*, 977 F2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)

APPENDIX V - LIST OF REFERENCES

<u>U.S. Patent /</u>	<u>Issued/ Publication</u>	<u>102(e) Date</u>	<u>Inventors</u>
<u>Publication . No.</u>	<u>Date</u>		
6,259,741	July 10, 2001		Chen
6,333,952	December 25, 2001		Lim et al.
5,701,164	December 23, 1997		Kato

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